Precision Measuring Instruments Supporting Medical Devices and Pharmaceutical Industries

The followings are application examples for Mitutoyo's precision measuring instruments.

Field of Application		Application	Mitutoyo's Precision Measuring Instruments							
			Coordinate Measuring Instruments	Vision Measuring Instruments	Form Measuring Instruments	Optical Measuring Instruments	Sensor Systems	Testing Instruments	Scales	Small Tools
										
Diagnostic devices	X-ray computed tomography scanner	Measurement of gantries's large bearings	●		●					●
		Measurement of bed frame dimensions	●							●
		Bed positioning control							●	
	Ultrasonic medical diagnosis system	Dimensional measurement of component parts	●	●	●	●		●		●
	X-Ray diagnostic equipment	Dimensional measurement of component parts	●	●	●	●		●		●
Medical Treatment Devices	Proton beam medical treatment equipment	Form and dimensional measurement of boluses and collimaters	●							●
	Injection syringes	Form measurement of syringes	●		●					●
		Form measurement of plunger parts		●	●	●				●
		Dimensional and angle measurement of injection needle tips		●	●	●	●	●		●
		Hardness measurement of cannulas		●				●		
	Suture needles	Dimensional and angle measurement of needle tips		●	●	●	●			●
	Artificial hip and knee joints	Dimensional and form measurement of heads and liners	●	●	●			●		●
	Artificial bones	Dimensional and form measurement of fixation and connection plate parts for heads and liners	●	●	●	●				●
	Dental implants	Measurement of fixtures and abutments		●	●	●		●		●
	Catheters	Outside diameter measurement					●			●
		Elasticity measurement						●		
	Stents	Dimensional and hardness measurement of parts		●		●		●		●
	Contact lenses	Form and thickness measurement			●		●			●
	Dental instruments	Measurement of dental unit frames	●							●
		Dimensional measurement of hand pieces	●	●	●	●				●
		Dimensional measurement of drills		●	●	●				●
		Hardness measurement of metallic materials						●		
	Electric and magnetic therapy apparatuses	Dimensional measurement of component parts	●		●					●
	Hearing aids	Dimensional measurement of component parts		●		●				●
	Pacemakers	Dimensional measurement of component parts		●		●				●
	Steel equipments	Dimensional and hardness measurement of parts	●	●	●	●		●		●
	Blood drawing, fluid and blood transfusion instruments	Dimensional and form measurement of joints		●	●	●				●
Pharmaceutical	Tablets	Dimensional measurement		●		●				●
		Hardness measurement of tablets						●		
	Capsules	Dimensional measurement		●		●				●
	Antiphlogistic analgetic for external use	Thickness and surface roughness measurement			●		●			●
	Containers and ampules	Dimensional measurement	●	●	●	●				●
Metal molds	Metal molds for tablet press	Dimensional, form and hardness measurement	●	●	●	●	●	●		●
	Molds for various plastic products	Dimensional, form and hardness measurement	●	●	●	●	●	●		●

Remarks:

Names of the pecision measuring instruments presented in this leaflet are classified into the products mentioned above.

Coordinate Measuring Instruments: Coordinate Measuring Machines, Portable Coordinate Measuring System
Form Measuring Instruments: Surface Roughness Measuring Instruments: CNC Form Measuring Instruments, Form Measuring Instruments, Roundness Measuring Machines
Optical Measuring Instruments: Optical Measuring Instruments, Profile Projecters, Measuring Microscopes, Surface Measuring Instruments
Sensor Systems: Laser Scan Micrometers, Litematic
Testing Instruments: Hardness Testing Instruments
Scales: Linear Scales

Whatever your challenges are, Mitutoyo supports you from start to finish.

Mitutoyo is not only a manufacturer of top quality measuring products but one that also offers qualified support for the lifetime of the equipment, backed up by comprehensive services that ensure your staff can make the very best use of the investment.

Apart from the basics of calibration and repair, Mitutoyo offers product and metrology training, as well as IT support for the sophisticated software used in modern measuring technology. We can also design, build, test and deliver measuring solutions and even, if deemed cost-effective, take your critical measurement challenges in-house on a sub-contract basis.

Find additional product literature and our product catalogue

https://www.mitutoyo.co.jp/global.html

Our products are classified as regulated items under Japanese Foreign Exchange and Foreign Trade Law.
Please consult us in advance if you wish to export our products to any other country.
If the purchased product is exported, even though it is not a regulated item (Catch-All controls item), the customer service available for that product may be affected. If you have any questions, please consult your local Mitutoyo sales office.

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Introduction to Precision Measuring Instrument Solutions

— Medical Device and Pharmaceutical Industries —

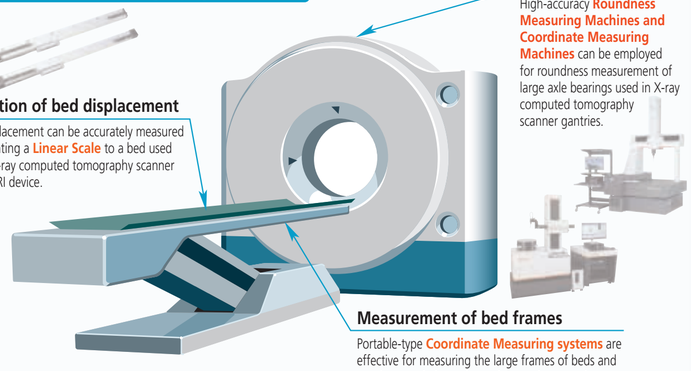
Mitutoyo

Mitutoyo Metrology Solutions

— Support for medical and pharmaceutical fields —

For the Diagnostic Device Field

X-ray computed tomography scanners



Large axle bearing

High-accuracy **Roundness Measuring Machines and Coordinate Measuring Machines** can be employed for roundness measurement of large axle bearings used in X-ray computed tomography scanner gantries.

Detection of bed displacement

Bed displacement can be accurately measured by mounting a **Linear Scale** to a bed used for an X-ray computed tomography scanner or an MRI device.

Measurement of bed frames

Portable-type **Coordinate Measuring systems** are effective for measuring the large frames of beds and couches: workpieces do not have to be moved to measuring instruments.

Endoscopes

Tip

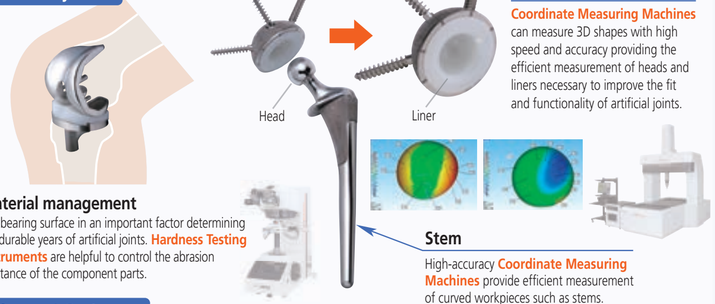
Vision and **Optical Measuring Instruments** are most appropriate for measuring the size and the position of small holes such as lens mounts and clamps.

Objective lens

Using **CNC Form Measuring Instruments**, high-accuracy profile and surface evaluation, and surface roughness measurement of aspheric lenses used in endoscopes and lenses for various medical optical devises is possible.

For the Therapeutic device Field

Artificial joints



Head/ Liner

Coordinate Measuring Machines can measure 3D shapes with high speed and accuracy providing the efficient measurement of heads and liners necessary to improve the fit and functionality of artificial joints.

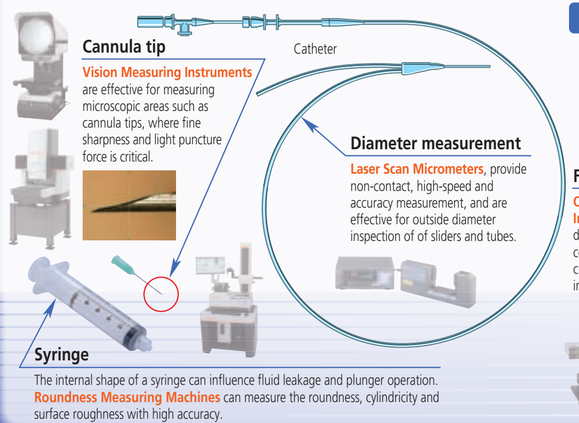
Material management

The bearing surface in an important factor determining the durable years of artificial joints. **Hardness Testing Instruments** are helpful to control the abrasion resistance of the component parts.

Stem

High-accuracy **Coordinate Measuring Machines** provide efficient measurement of curved workpieces such as stems.

Injector/ Catheter



Cannula tip

Vision Measuring Instruments are effective for measuring microscopic areas such as cannula tips, where fine sharpness and light puncture force is critical.

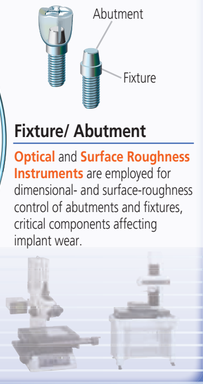
Diameter measurement

Laser Scan Micrometers, provide non-contact, high-speed and accuracy measurement, and are effective for outside diameter inspection of of sliders and tubes.

Syringe

The internal shape of a syringe can influence fluid leakage and plunger operation. **Roundness Measuring Machines** can measure the roundness, cylindricity and surface roughness with high accuracy.

Dental implants



Fixture/ Abutment

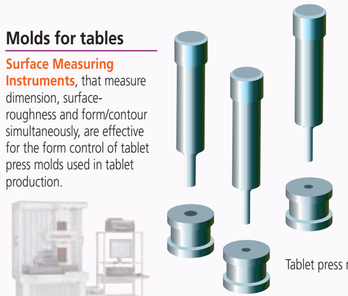
Optical and **Surface Roughness Instruments** are employed for dimensional- and surface-roughness control of abutments and fixtures, critical components affecting implant wear.

For the Pharmaceutical Goods Field

Tablets and capsules

Molds for tables

Surface Measuring Instruments, that measure dimension, surface-roughness and form/contour simultaneously, are effective for the form control of tablet press molds used in tablet production.



Tablet press molds

Capsules

Vision and **Optical Measuring Instruments**, provide non-contact, high-speed and accuracy measurement, effective for capsule dimension and inner diameter inspection and deformity control.

Tablets

Hardness Testing Instruments can be used to inspect tablet hardness, an important texture attribute of medicinal chemicals, and can also evaluate the hardness of the plating layers of tablet press molds.

Poultice, plaster, emergency adhesive plaster, etc.

Emergency adhesive plaster

Plaster

Soft material object

The **Litematic** is very appropriate for measuring deformable workpieces. Measurement of thickness is accomplished with low measuring force, and minute impact on the base.

Container

Mouths of containers/ bottles

Optical and **Form Measuring Instruments** are effective for the measurement of screws thread form, bottle diameters and container openings, where control of air-tight seals is critical. **Surface Roughness instruments** can be used to inspect openings where surface roughness can affect the sealed state.

For various fields including the research, development and production of medical devises and pharmaceutical goods

Small Tools (calipers, micrometers, dial indicators, etc.) and Linear Gages are helpful for dimension and form measurement of various workpieces such as materials, component parts and finished products.